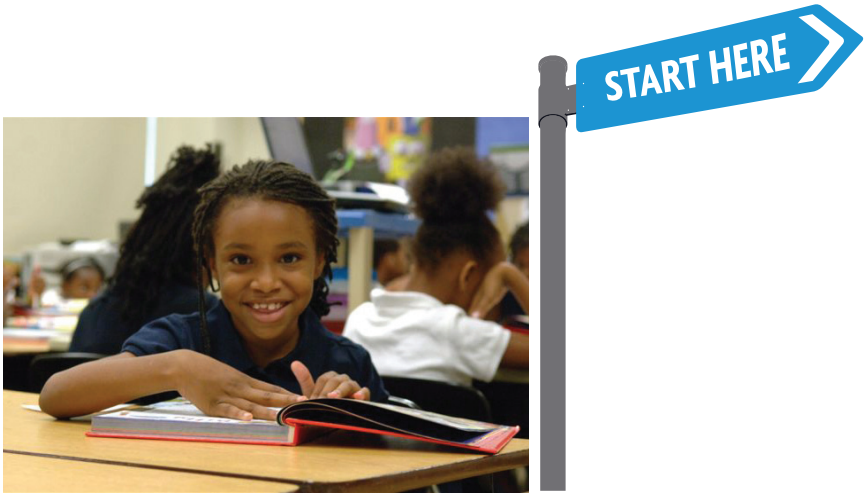
Department of Education
Carmen Fariña, Chancellor

Council of the Great City Schools

parent ROADMAP

SUPPORTING YOUR CHILD IN GRADE FOUR

MATHEMATICS



America's schools are working to provide higher quality instruction than ever before.

The way we taught students in the past simply does not prepare them for the higher demands of college and careers today and in the future. Your school and schools throughout the country are working to improve teaching and learning to ensure that all children will graduate high school with the skills they need to be successful.

In mathematics, this means three major changes. Teachers will concentrate on teaching a more focused set of major math concepts and skills. This will allow students time to master important ideas and skills in a more organized way throughout the year and from one grade to the next. It will also call for teachers to use rich and challenging math content and to engage students in solving real-world problems in order to inspire greater interest in mathematics.

What your child will be learning in grade four mathematics

In grade four, your child will use addition, subtraction, multiplication, and division to solve word problems, including problems involving measurement of volume, mass, and time. Students will continue to build their understanding of fractions—creating equal fractions, comparing the size of fractions, adding and subtracting fractions, and multiplying fractions by whole numbers. They will also start to understand the relationship between fractions and decimals. Activities in these areas will include:

- Adding and subtracting whole numbers up to 1 million quickly and accurately
- Solving multi-step word problems, including problems involving measurement and converting measurements from larger to smaller units
- Multiplying and dividing multi-digit numbers
- Extending understanding of fractions by comparing the size of two fractions with different numerators (top numbers) and different denominators (bottom numbers)
- Creating equal fractions ($\frac{3}{4} = \frac{3 \times 2}{4 \times 2} = \frac{6}{8}$)
- Adding and subtracting fractions with the same denominator
- Building fractions from smaller fractions ($\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$)
- Connecting addition and subtraction of whole numbers to multiplying fractions by whole numbers
- Connecting addition of fractions to the concept of angle measurement
- Representing and interpreting data
- Converting fractions with denominators of 10 or 100 into decimals
- Locating decimals on a number line
- Comparing decimals and fractions using the symbols **>** (more than), = (equal to), and **<** (less than)

Partnering with your child's teacher

Don't be afraid to reach out to your child's teacher—you are an important part of your child's education. Ask to see a sample of your child's work or bring a sample with you. Ask the teacher questions like:

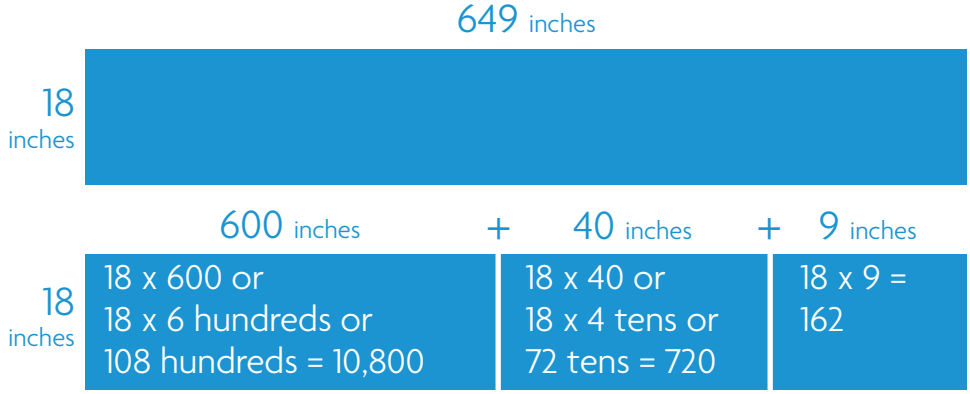
- Is my child at the level where he/she should be at this point of the school year?
- Where is my child excelling? How can I support this success?
- What do you think is giving my child the most trouble? How can I help my child improve in this area?
- What can I do to help my child with upcoming work?

Here are just a few examples of how students will develop and use their understanding of place value in grade four.

Grade Three Mathematics	Grade Four Mathematics	Grade Five Mathematics
• Use place value understanding to round whole numbers to the nearest 10 or 100 • Quickly and accurately add and subtract numbers through 1000 using knowledge of place value • Use place value understanding to multiply and divide numbers up through 100 • Multiply one-digit whole numbers by multiples of 10 between 10 and 90. For example, 9×80 or 5×60	• Use place value understanding to round multi-digit whole numbers to any place • Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right • Use place value understanding to find the product of two multi-digit numbers • Compare two multi-digit numbers based on meanings of the digits in each place, using the symbols > (more than), = (equal to), and < (less than)	• Use place value understanding to round decimals to any place • Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left • Read, write, and compare decimals based on the meanings of the digits in the tenths, hundredths, and thousandths place, using the symbols >, =, and <

To find the area of this rectangle, students can first break it down into three parts. The length of each part can then be multiplied by the width of 18.

18(600+40+9) = 18x600+18x40+18x9.



Students use the concepts of area and place value as strategies to multiply multi-digit numbers. Students will explore a variety of strategies to deepen their understanding of multiplication.

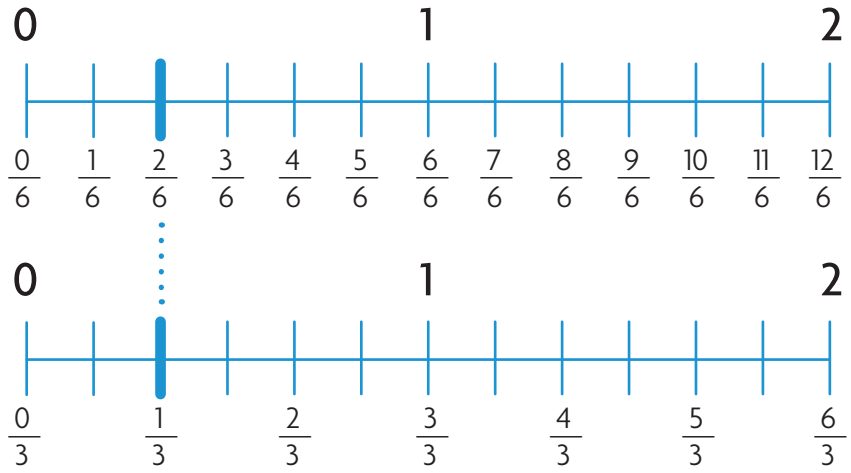
Students learn that 649 x 18 is also equal to (649 x 10) + (649 x 8).

```
  3 7
  649
 x 18
 5192
 6490
11,682
```

Here are just a few examples of how students will learn about and work with fractions in grade four.

Grade Three Mathematics	Grade four Mathematics	Grade Five Mathematics
• Determine a fraction's place on a number line by defining the length from 0 to 1 as the whole and "cutting it" into equal parts • Understand two fractions as equal if they are the same size or at the same point on a number line • Compare the size of two different fractions of the same size object. For example, which is bigger, $\frac{1}{8}$ of a pizza or $\frac{1}{6}$ of that same pizza?	• Break down a fraction into smaller fractions with the same denominator, or bottom number, in more than one way ($\frac{3}{8} = \frac{1}{8}+\frac{1}{8}+\frac{1}{8} = \frac{2}{8}+\frac{1}{8}$) • Explain why a fraction is equal to another fraction • Add and subtract mixed numbers (whole numbers mixed with fractions, such as $1\frac{1}{5}$) with the same denominators • Multiply a fraction by a whole number	• Interpret a fraction as division of the numerator (the top number) by the denominator (the bottom number) • Add and subtract fractions with different denominators • Multiply a fraction by a whole number or another fraction • Divide fractions by whole numbers and whole numbers by fractions

Students will use the number line to break fractions into smaller fractions. This allows them to show, for example, that $\frac{2}{6}=\frac{1}{3}$.



Understanding and creating equal fractions will prepare students for the next step: adding and subtracting fractions with different denominators.

Helping your child learn outside of school

1. Use everyday objects to allow your child to explore the concept of fractions. For example, use measuring cups so students see how many times you have to refill a $\frac{1}{4}$ cup to equal a $\frac{1}{2}$ cup or how many $\frac{1}{3}$'s are in two cups. Have students describe two fractions that are equal using a measuring cup (filling a $\frac{1}{4}$ measuring cup twice is the same as filling one $\frac{1}{2}$ measuring cup).
2. Have your child write or describe fractions in different ways. For example, what are some different ways to make $\frac{3}{4}$? Answers could include $\frac{1}{4}+\frac{1}{4}+\frac{1}{4}$ or $3 \times \frac{1}{4}$
3. Ask your child to create and describe equal fractions. For example, have students take a sheet of paper, fold the paper in half, and then unfold and shade $\frac{1}{2}$. Then have students take the same sheet of paper and fold the paper in a half again. Unfold the paper and have students discuss the number of parts that are now shaded. Encourage your child to talk about ways to show that $\frac{1}{2} = \frac{2}{4}$. (Students may continue this process creating other equal fractions.)
4. Encourage your child to stick with it whenever a problem seems difficult. This will help your child see that **everyone** can learn math.
5. Praise your child when he or she makes an effort and share in the excitement when he or she solves a problem or understands something for the first time.

Additional Resources

For more information on the Common Core State Standards for mathematics, go to http://www.corestandards.org/about-the-standards/key-points-in-mathematics or http://www.commoncoreworks.org.

For more information on the standards in mathematics related to place value (Number and Operations in Base Ten) or fractions, go to http://commoncoretools.me/category/progressions/.

For more information on helping your child learn mathematics (with activities from pre-school to grade five), go to http://www2.ed.gov/parents/academic/help/math/index.html.